SEQUENCE LISTING

<110> GALLOWAY, DARREL R. MATECZUN, ALFRED J.	
<120> METHODS FOR PROTECTION AGAINST LETHAL INFECTION WITH BACILLUS ANTHRACIS	
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<140> 09/747,521 <141> 2000-12-21	
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aaa aat aaa gat gag aat aag aga aaa gat gaa gaa	192
cag gaa gag cat tta aag gaa atc atg aaa cac att gta aaa ata gaa Gln Glu Glu His Leu Lys Glu Ile Met Lys His Ile Val Lys Ile Glu 65 70 75 80	240
gta aaa ggg gag gaa gct gtt aaa aaa gag gca gca gaa aag cta ctt Val Lys Gly Glu Glu Ala Val Lys Lys Glu Ala Ala Glu Lys Leu 85 90 95	288
gag aaa gta cca tct gat gtt tta gag atg tat aaa gca att gga gga Glu Lys Val Pro Ser Asp Val Leu Glu Met Tyr Lys Ala Ile Gly Gly 100 105 110	336

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gc Al	a tta a Leu 130	tct Ser	gaa Glu	gat Asp	Lys	aaa Lys 135	aaa Lys	ata Ile	aaa Lys	gac Asp	att Ile 140	tat Tyr	gly ggg	aaa Lys	gat Asp	432
gc Al 14	t tta a Leu 5	tta Leu	cat His	gaa Glu	cat His 150	tat Tyr	gta Val	tat Tyr	gca Ala	aaa Lys 155	gaa Glu	gga Gly	tat Tyr	gaa Glu	ccc Pro 160	480
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Al	a ctg a Leu	Asn	Val 180	Tyr	Tyr	Glu	Ile	Gly 185	Lys	Ile	Leu	Ser	Arg 190	Asp	Ile	576
Le	a agt u Ser	Lys 195	Ile	Asn	Gln	Pro	Tyr 200	Gln	Lys	Phe	Leu	205	Val	Leu	Asn	624
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g G	aa gga lu Gl	a aga y Arg	gga Gly	ctt Leu 325	Leu	aaa Lys	aag Lys	ctg Leu	cag Glr 330	ı Ile	cct Pro	att Ile	gag Glu	cca Pro 335	гург	1008

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ttt Phe	ttt Phe 770	Ala	ı gaa	a gco ı Ala	ttt Phe	agg Arg 775	l Leu	atc Met	cat His	tct Ser	ace Thr	gac Asp	cat His	gct Ala	gaa Glu	2352

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Lys Asn Lys Asp Glu Asn Lys Arg Lys Asp Glu Glu Arg Asn Lys Thr 50 55 60

Gln Glu Glu His Leu Lys Glu Ile Met Lys His Ile Val Lys Ile Glu 65 70 75 80

Val Lys Gly Glu Glu Ala Val Lys Lys Glu Ala Ala Glu Lys Leu Leu 85 90 95

Glu Lys Val Pro Ser Asp Val Leu Glu Met Tyr Lys Ala Ile Gly Gly
100 105 110

Lys Ile Tyr Ile Val Asp Gly Asp Ile Thr Lys His Ile Ser Leu Glu 115 120 125

Ala Leu Ser Glu Asp Lys Lys Lys Ile Lys Asp Ile Tyr Gly Lys Asp 130 135 140

Ala Leu Leu His Glu His Tyr Val Tyr Ala Lys Glu Gly Tyr Glu Pro 145 150 155 160

Val Leu Val Ile Gln Ser Ser Glu Asp Tyr Val Glu Asn Thr Glu Lys 165 170 175

Ala Leu Asn Val Tyr Tyr Glu Ile Gly Lys Ile Leu Ser Arg Asp Ile 180 185 190

Leu Ser Lys Ile Asn Gln Pro Tyr Gln Lys Phe Leu Asp Val Leu Asn 195 200 205

Thr Ile Lys Asn Ala Ser Asp Ser Asp Gly Gln Asp Leu Leu Phe Thr 210 215 220 Asn Gln Leu Lys Glu His Pro Thr Asp Phe Ser Val Glu Phe Leu Glu 230 Gln Asn Ser Asn Glu Val Gln Glu Val Phe Ala Lys Ala Phe Ala Tyr 245 250 Tyr Ile Glu Pro Gln His Arg Asp Val Leu Gln Leu Tyr Ala Pro Glu Ala Phe Asn Tyr Met Asp Lys Phe Asn Glu Glu Glu Ile Asn Leu Ser 280 Leu Glu Glu Leu Lys Asp Gln Arg Met Leu Ser Arg Tyr Glu Lys Trp 295 290 Glu Lys Ile Lys Gln His Tyr Gln His Trp Ser Asp Ser Leu Ser Glu 315 Glu Gly Arg Gly Leu Leu Lys Lys Leu Gln Ile Pro Ile Glu Pro Lys 330 Lys Asp Asp Ile Ile His Ser Leu Ser Gln Glu Glu Lys Glu Leu Leu 345 Lys Arg Ile Gln Ile Asp Ser Ser Asp Phe Leu Ser Thr Glu Glu Lys Glu Phe Leu Lys Lys Leu Gln Ile Asp Ile Arg Asp Ser Leu Ser Glu 375 Glu Glu Lys Glu Leu Leu Asn Arg Ile Gln Val Asp Ser Ser Asn Pro 395 Leu Ser Glu Lys Glu Lys Glu Phe Leu Lys Lys Leu Lys Leu Asp Ile 410 405 Gln Pro Tyr Asp Ile Asn Gln Arg Leu Gln Asp Thr Gly Gly Leu Ile 425 Asp Ser Pro Ser Ile Asn Leu Asp Val Arg Lys Gln Tyr Lys Arg Asp Ile Gln Asn Ile Asp Ala Leu Leu His Gln Ser Ile Gly Ser Thr Leu 455 Tyr Asn Lys Ile Tyr Leu Tyr Glu Asn Met Asn Ile Asn Asn Leu Thr 470 Ala Thr Leu Gly Ala Asp Leu Val Asp Ser Thr Asp Asn Thr Lys Ile 490 Asn Arg Gly Ile Phe Asn Glu Phe Lys Lys Asn Phe Lys Tyr Ser Ile Ser Ser Asn Tyr Met Ile Val Asp Ile Asn Glu Arg Pro Ala Leu Asp

520

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- Gly Tyr Leu Glu Asn Gly Lys Leu Ile Leu Gln Arg Asn Ile Gly Leu 545 550 555 560
- Glu Ile Lys Asp Val Gln Ile Ile Lys Gln Ser Glu Lys Glu Tyr Ile
 565 570 575
- Arg Ile Asp Ala Lys Val Val Pro Lys Ser Lys Ile Asp Thr Lys Ile 580 585 590
- Gln Glu Ala Gln Leu Asn Ile Asn Gln Glu Trp Asn Lys Ala Leu Gly 595 600 605
- Leu Pro Lys Tyr Thr Lys Leu Ile Thr Phe Asn Val His Asn Arg Tyr 610 615 620
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- Asn Asn Ile Gln Ser Asp Leu Ile Lys Lys Val Thr Asn Tyr Leu Val 645 650 655
- Asp Gly Asn Gly Arg Phe Val Phe Thr Asp Ile Thr Leu Pro Asn Ile 660 665 670
- Ala Glu Gln Tyr Thr His Gln Asp Glu Ile Tyr Glu Gln Val His Ser 675 680 685
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- Phe Gly His Ala Val Asp Asp Tyr Ala Gly Tyr Leu Leu Asp Lys Asn 725 730 735
- Gln Ser Asp Leu Val Thr Asn Ser Lys Lys Phe Ile Asp Ile Phe Lys 740 745 750
- Glu Glu Gly Ser Asn Leu Thr Ser Tyr Gly Arg Thr Asn Glu Ala Glu
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Asn Ile Pro Ser Glu Asn Gln Tyr Phe Gln Ser Ala Ile Trp Ser Gly
                 85
ttt atc aaa gtt aag aag agt gat gaa tat aca ttt gct act tcc gct
                                                                   336
Phe Ile Lys Val Lys Lys Ser Asp Glu Tyr Thr Phe Ala Thr Ser Ala
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            100
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                                                                    384
Asp Asn His Val Thr Met Trp Val Asp Asp Gln Glu Val Ile Asn Lys
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                             120
        115
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Ala Ser Asn Ser Asn Lys Ile Arg Leu Glu Lys Gly Arg Leu Tyr Gln
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145
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Gln	Glu	Asn 35	Arg	Leu	Leu	Asn	Glu 40	Ser	Glu	Ser	Ser	Ser 45	Gln	Gly	Leu	
Leu	Gly 50	Tyr	Tyr	Phe	Ser	Asp 55	Leu	Asn	Phe	Gln	Ala 60	Pro	Met	Val	Val	
Thr 65		Ser	Thr	Thr	Gly 70		Leu	Ser	Ile	Pro 75		Ser	Glu	Leu	Glu 80	
Asn	Ile	Pro	Ser	Glu 85		Gln	Tyr	Phe	Gln 90		Ala	Ile	Trp	Ser 95		

- Phe Ile Lys Val Lys Lys Ser Asp Glu Tyr Thr Phe Ala Thr Ser Ala 100 105 110
- Asp Asn His Val Thr Met Trp Val Asp Asp Gln Glu Val Ile Asn Lys \$115\$
- Ala Ser Asn Ser Asn Lys Ile Arg Leu Glu Lys Gly Arg Leu Tyr Gln 130 135 140
- Ile Lys Ile Gln Tyr Gln Arg Glu Asn Pro Thr Glu Lys Gly Leu Asp 145 150 155 160
- Phe Lys Leu Tyr Trp Thr Asp Ser Gln Asn Lys Lys Glu Val Ile Ser 165 170 175
- Ser Asp Asn Leu Gln Leu Pro Glu Leu Lys Gln Lys Ser Ser Asn Ser 180 185 190
- Arg Lys Lys Arg Ser Thr Ser Ala Gly Pro Thr Val Pro Asp Arg Asp 195 200 205
- Asn Asp Gly Ile Pro Asp Ser Leu Glu Val Glu Gly Tyr Thr Val Asp 210 215 220
- Val Lys Asn Lys Arg Thr Phe Leu Ser Pro Trp Ile Ser Asn Ile His 225 230 235
- Glu Lys Lys Gly Leu Thr Lys Tyr Lys Ser Ser Pro Glu Lys Trp Ser 245 250 255
- Thr Ala Ser Asp Pro Tyr Ser Asp Phe Glu Lys Val Thr Gly Arg Ile 260 265 270
- Asp Lys Asn Val Ser Pro Glu Ala Arg His Pro Leu Val Ala Ala Tyr 275 280 285
- Pro Ile Val His Val Asp Met Glu Asn Ile Ile Leu Ser Lys Asn Glu 290 295 300
- Asp Gln Ser Thr Gln Asn Thr Asp Ser Gln Thr Arg Thr Ile Ser Lys 305 310 315 320
- Asn Thr Ser Thr Ser Arg Thr His Thr Ser Glu Val His Gly Asn Ala 325 330 335
- Glu Val His Ala Ser Phe Phe Asp Ile Gly Gly Ser Val Ser Ala Gly 340 345 350
- Phe Ser Asn Ser Asn Ser Ser Thr Val Ala Ile Asp His Ser Leu Ser 355 360 365
- Leu Ala Gly Glu Arg Thr Trp Ala Glu Thr Met Gly Leu Asn Thr Ala 370 375 380
- Asp Thr Ala Arg Leu Asn Ala Asn Ile Arg Tyr Val Asn Thr Gly Thr 385 390 395 400

- Ala Pro Ile Tyr Asn Val Leu Pro Thr Thr Ser Leu Val Leu Gly Lys \$405\$
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- Ile Leu Ala Pro Asn Asn Tyr Tyr Pro Ser Lys Asn Leu Ala Pro Ile 435 440 445
- Ala Leu Asn Ala Gln Asp Asp Phe Ser Ser Thr Pro Ile Thr Met Asn 450 455 460
- Tyr Asn Gln Phe Leu Glu Leu Glu Lys Thr Lys Gln Leu Arg Leu Asp 465 470 475 480
- Thr Asp Gln Val Tyr Gly Asn Ile Ala Thr Tyr Asn Phe Glu Asn Gly 485 490 495
- Arg Val Arg Val Asp Thr Gly Ser Asn Trp Ser Glu Val Leu Pro Gln 500 505 505
- Ile Gln Glu Thr Thr Ala Arg Ile Ile Phe Asn Gly Lys Asp Leu Asn 515 520 525
- Leu Val Glu Arg Arg Ile Ala Ala Val Asn Pro Ser Asp Pro Leu Glu 530 535 540
- Thr Thr Lys Pro Asp Met Thr Leu Lys Glu Ala Leu Lys Ile Ala Phe 545 550 560
- Gly Phe Asn Glu Pro Asn Gly Asn Leu Gln Tyr Gln Gly Lys Asp Ile 565 570 575
- Thr Glu Phe Asp Phe Asn Phe Asp Gln Gln Thr Ser Gln Asn Ile Lys
 580 585 590
- Asn Gln Leu Ala Glu Leu Asn Ala Thr Asn Ile Tyr Thr Val Leu Asp 595 600 605
- Lys Ile Lys Leu Asn Ala Lys Met Asn Ile Leu Ile Arg Asp Lys Arg 610 620
- Phe His Tyr Asp Arg Asn Asn Ile Ala Val Gly Ala Asp Glu Ser Val 625 630 630
- Val Lys Glu Ala His Arg Glu Val Ile Asn Ser Ser Thr Glu Gly Leu 645 650 655
- Leu Leu Asn Ile Asp Lys Asp Ile Arg Lys Ile Leu Ser Gly Tyr Ile 660 670
- Val Glu Ile Glu Asp Thr Glu Gly Leu Lys Glu Val Ile Asn Asp Arg 675 680 685
- Tyr Asp Met Leu Asn Ile Ser Ser Leu Arg Gln Asp Gly Lys Thr Phe 690 695 700

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Pro Asn Tyr Lys Val Asn Val Tyr Ala Val Thr Lys Glu Asn Thr Ile
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gta aca gca att act ttg agt ggt ccc gtc ttt atc ccc ctt gta cag Val Thr Ala Ile Thr Leu Ser Gly Pro Val Phe Ile Pro Leu Val Gln 20 25 30	96
ggg gcg ggc ggt cat ggt gat gta ggt atg cac gta aaa gag aaa gag Gly Ala Gly Gly His Gly Asp Val Gly Met His Val Lys Glu Lys Glu 35 40 45	144
aaa aat aaa gat gag aat aag aga aaa gat gaa gaa	192
cag gaa gag cat tta aag gaa atc atg aaa cac att gta aaa ata gaa Gln Glu Glu His Leu Lys Glu Ile Met Lys His Ile Val Lys Ile Glu 65 70 75 80	240
gta aaa ggg gag gaa gct gtt aaa aaa gag gca gca gaa aag cta ctt Val Lys Gly Glu Glu Ala Val Lys Lys Glu Ala Ala Glu Lys Leu Leu 85 90 95	288
gag aaa gta cca tct gat gtt tta gag atg tat aaa gca att gga gga Glu Lys Val Pro Ser Asp Val Leu Glu Met Tyr Lys Ala Ile Gly Gly 100 105 110	336
aag ata tat att gtg gat ggt gat att aca aaa cat ata tct tta gaa Lys Ile Tyr Ile Val Asp Gly Asp Ile Thr Lys His Ile Ser Leu Glu 115 120 125	384
gca tta tct gaa gat aag aaa aaa ata aaa gac att tat ggg aaa gat Ala Leu Ser Glu Asp Lys Lys Lys Ile Lys Asp Ile Tyr Gly Lys Asp 130 135 140	432
gct tta tta cat gaa cat tat gta tat gca aaa gaa gga tat gaa ccc Ala Leu Leu His Glu His Tyr Val Tyr Ala Lys Glu Gly Tyr Glu Pro 145 150 155 160	480

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tta Leu	agt Ser	aaa Lys 195	att Ile	aat Asn	caa Gln	cca Pro	tat Tyr 200	cag Gln	aaa Lys	ttt Phe	tta Leu	gat Asp 205	gta Val	tta Leu	aat Asn	624
acc Thr	att Ile 210	aaa Lys	aat Asn	gca Ala	tct Ser	gat Asp 215	tca Ser	gat Asp	gga Gly	caa Gln	gat Asp 220	ctt Leu	tta Leu	ttt Phe	act Thr	672
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gct Ala	ttt Phe	aat Asn 275	tac Tyr	atg Met	gat Asp	aaa Lys	ttt Phe 280	aac Asn	gaa Glu	caa Gln	gaa Glu	ata Ile 285	aat Asn	cta Leu	tcc Ser	864
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gaç Glu	ttt Phe	e Leu	aaa Lys	aag Lys	cta Leu	caa Glr 375	ılle	gat Asp	att Ile	cgt Arg	gat Asp 380	Ser	tta Leu	tct Ser	gaa Glu	1152

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caa Gln	cca Pro	tat Tyr	gat Asp 420	att Ile	aat Asn	caa Gln	agg Arg	ttg Leu 425	caa Gln	gat Asp	aca Thr	gga Gly	999 Gly 430	tta Leu	att Ile	1296
gat Asp	agt Ser	ccg Pro 435	tca Ser	att Ile	aat Asn	ctt Leu	gat Asp 440	gta Val	aga Arg	aag Lys	cag Gln	tat Tyr 445	aaa Lys	agg Arg	gat Asp	1344
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tac Tyr 465	aat Asn	aaa Lys	att Ile	tat Tyr	ttg Leu 470	tat Tyr	gaa Glu	aat Asn	atg Met	aat Asn 475	atc Ile	aat Asn	aac Asn	ctt Leu	aca Thr 480	1440
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gaa Glu	ata Ile	aag Lys	gat Asp	gta Val 565	Gln	ata Ile	att Ile	aag Lys	caa Gln 570	Ser	gaa Glu	aaa Lys	gaa Glu	tat Tyr 575	ata Ile	1728
agg Arg	att Ile	gat Asp	gcg Ala 580	Lys	gta Val	gtg Val	cca Pro	aag Lys 585	Ser	aaa Lys	ata Ile	gat Asp	aca Thr 590	rys	att Ile	1776
caa Glr	gaa Glu	gca Ala 599	a Gln	g tta Leu	aat Asr	. ata ı Ile	aat Asn 600	Glr	gaa Glu	tgg Trp	aat Asn	aaa Lys 605	Ala	tta Leu	ggg Gly	1824

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cgt Arg 785	Leu	aaa Lys	gtt Val	caa Gln	aaa Lys 790	Asn	gct Ala	ccg Pro	aaa Lys	act Thr 795	Phe	caa Gln	ttt Phe	att Ile	aac Asn 800	2400
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- Gly Ala Gly Gly His Gly Asp Val Gly Met His Val Lys Glu Lys Glu 40 45
- Lys Asn Lys Asp Glu Asn Lys Arg Lys Asp Glu Glu Arg Asn Lys Thr 50 60
- Gln Glu Glu His Leu Lys Glu Ile Met Lys His Ile Val Lys Ile Glu 65 70 75 80
- Val Lys Gly Glu Glu Ala Val Lys Lys Glu Ala Ala Glu Lys Leu Leu 85 90
- Glu Lys Val Pro Ser Asp Val Leu Glu Met Tyr Lys Ala Ile Gly Gly
 100 105 110
- Lys Ile Tyr Ile Val Asp Gly Asp Ile Thr Lys His Ile Ser Leu Glu 115 120 125
- Ala Leu Ser Glu Asp Lys Lys Lys Ile Lys Asp Ile Tyr Gly Lys Asp 130 135 140
- Val Leu Val Ile Gln Ser Ser Glu Asp Cys Val Glu Asn Thr Glu Lys 165 170 175
- Ala Leu Asn Val Tyr Tyr Glu Ile Gly Lys Ile Leu Ser Arg Asp Ile 180 185 190
- Leu Ser Lys Ile Asn Gln Pro Tyr Gln Lys Phe Leu Asp Val Leu Asn 195 200 205
- Thr Ile Lys Asn Ala Ser Asp Ser Asp Gly Gln Asp Leu Leu Phe Thr 210 215 220
- Asn Gln Leu Lys Glu His Pro Thr Asp Phe Ser Val Glu Phe Leu Glu 225 230 235 240
- Gln Asn Ser Asn Glu Val Gln Glu Val Phe Ala Lys Ala Phe Ala Tyr 245 250 255
- Tyr Ile Glu Pro Gln His Arg Asp Val Leu Gln Leu Tyr Ala Pro Glu 260 265 270
- Ala Phe Asn Tyr Met Asp Lys Phe Asn Glu Gln Glu Ile Asn Leu Ser 275 280 280
- Leu Glu Glu Leu Lys Asp Gln Arg Met Leu Ser Arg Tyr Glu Lys Trp 290 295 300

- Glu Lys Ile Lys Gln His Tyr Gln His Trp Ser Asp Ser Leu Ser Glu 305 310 315 320
- Glu Gly Arg Gly Leu Leu Lys Lys Leu Gln Ile Pro Ile Glu Pro Lys 325 330 335
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- Lys Arg Ile Gln Ile Asp Ser Ser Asp Phe Leu Ser Thr Glu Glu Lys 355 360 365
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- Glu Glu Lys Glu Leu Leu Asn Arg Ile Gln Val Asp Ser Ser Asn Pro 385 390 395 400
- Leu Ser Glu Lys Glu Lys Glu Phe Leu Lys Lys Leu Lys Leu Asp Ile 405 410 415
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- Glu Ile Lys Asp Val Gln Ile Ile Lys Gln Ser Glu Lys Glu Tyr Ile 565 570 575
- Arg Ile Asp Ala Lys Val Val Pro Lys Ser Lys Ile Asp Thr Lys Ile 580 585 590
- Gln Glu Ala Gln Leu Asn Ile Asn Gln Glu Trp Asn Lys Ala Leu Gly 595 600 605

- Leu Pro Lys Tyr Thr Lys Leu Ile Thr Phe Asn Val His Asn Arg Tyr $610 \\ \hspace{1.5cm} 615 \\ \hspace{1.5cm} 620$
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- Asn Asn Ile Gln Ser Asp Leu Ile Lys Lys Val Thr Asn Tyr Leu Val 645 655
- Asp Gly Asn Gly Arg Phe Val Phe Thr Asp Ile Thr Leu Pro Asn Ile 660 665 670
- Ala Glu Gln Tyr Thr His Gln Asp Glu Ile Tyr Glu Gln Val His Ser 675 680 685
- Lys Gly Leu Tyr Val Pro Glu Ser Arg Ser Ile Leu Leu His Gly Pro 690 695 700
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- Gln Ser Asp Leu Val Thr Asn Ser Lys Lys Phe Ile Asp Ile Phe Lys 740 745 750
- Glu Glu Gly Ser Asn Leu Thr Ser Tyr Gly Arg Thr Asn Glu Ala Glu 755 760 765
- Phe Phe Ala Glu Ala Phe Arg Leu Met His Ser Thr Asp His Ala Glu
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Asp Gln Ile Lys Phe Ile Ile Asn Ser 805